



## SEQUENCE LISTING

<10> Croce, Carlo  
Brenner, Charles  
Pekarski, Yuri

<120> CRYSTAL STRUCTURE OF WORM NitFhit  
REVEALS THAT A Nit TETRAMER BINDS TWO Fhit DIMERS

<130> CRO01.NP007

<140> 09/855,294

<141> 2001-05-15

<150> 60/204,713

<151> 2000-05-16

<160> 11

<170> FastSEQ for Windows Version 4.0

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<211> 276

<212> PRT

<213> Homo sapien

<400> 1

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Ser	Thr	Gln	Lys	Leu	Ser	Glu	Val	Ala	Lys	Glu	Cys	Ser	Ile	Tyr	Leu
65				70					75					80	
Ile	Gly	Gly	Ser	Ile	Pro	Glu	Glu	Asp	Ala	Gly	Lys	Leu	Tyr	Asn	Thr
			85					90						95	
Cys	Ala	Val	Phe	Gly	Pro	Asp	Gly	Thr	Leu	Leu	Ala	Lys	Tyr	Arg	Lys
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Gly	Ala	Phe	Asn	Leu	Thr	Thr	Gly	Pro	Ala	His	Trp	Glu	Leu	Leu	Gln
			180					185					190		

Arg	Ser	Arg	Ala	Val	Asp	Asn	Gln	Val	Tyr	Val	Ala	Thr	Ala	Ser	Pro
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Val	Asn	Pro	Trp	Gly	Glu	Val	Leu	Ala	Lys	Ala	Gly	Thr	Glu	Glu	Ala
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Ile	Val	Tyr	Ser	Asp	Ile	Asp	Leu	Lys	Lys	Leu	Ala	Glu	Ile	Arg	Gln
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Gln	Ile	Pro	Val	Phe	Arg	Gln	Lys	Arg	Ser	Asp	Leu	Tyr	Ala	Val	Glu
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Lys	Gln	Gly	Ala	Asn	Ile	Val	Ser	Leu	Pro	Glu	Cys	Phe	Asn	Ser	Pro
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Tyr	Gly	Thr	Thr	Tyr	Phe	Pro	Asp	Tyr	Ala	Glu	Lys	Ile	Pro	Gly	Glu
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Ser	Thr	Gln	Lys	Leu	Ser	Glu	Val	Ala	Lys	Glu	Ser	Ser	Ile	Tyr	Leu
65					70					75				80	
Ile	Gly	Gly	Ser	Ile	Pro	Glu	Glu	Asp	Ala	Gly	Lys	Leu	Tyr	Asn	Thr
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Cys	Ser	Val	Phe	Gly	Pro	Asp	Gly	Ser	Leu	Leu	Val	Lys	His	Arg	Lys
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Gly	Ala	Phe	Asn	Leu	Thr	Thr	Gly	Pro	Ala	His	Trp	Glu	Leu	Leu	Gln
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225					230					235					240
Ile	Leu	Tyr	Ser	Asp	Ile	Asp	Leu	Lys	Lys	Leu	Ala	Glu	Ile	Arg	Gln
				245					250					255	
Gln	Ile	Pro	Ile	Leu	Lys	Gln	Lys	Arg	Ala	Asp	Leu	Tyr	Thr	Val	Glu
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<400> 3

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Leu	His	Gly	Asp	Thr	Ile	Gln	Arg	Tyr	Thr	Gln	Leu	Ala	Arg	Glu	Cys
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Gly	Leu	Trp	Leu	Ser	Leu	Gly	Gly	Phe	His	Glu	Lys	Gly	Pro	Asn	Trp
				85				90						95	
Asp	Thr	Asp	Gln	Arg	Ile	Ser	Asn	Ser	His	Val	Val	Val	Asp	Asn	Thr
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Gly	His	Ile	Val	Ser	Val	Tyr	Arg	Lys	Ala	His	Leu	Phe	Asp	Val	Asp
	115						120					125			
Leu	Gln	Asn	Gly	Val	Ser	Leu	Arg	Glu	Ser	Ser	Ser	Thr	Leu	Pro	Gly
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Ala	Glu	Leu	Ile	Arg	Pro	Ile	Thr	Ser	Pro	Ala	Gly	Lys	Ile	Gly	Leu
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Gly	Val	Cys	Tyr	Asp	Leu	Arg	Phe	Pro	Glu	Phe	Ser	Leu	Ala	Leu	Ala
				165				170						175	
Gln	Gln	Gly	Ala	Glu	Leu	Leu	Thr	Tyr	Pro	Ser	Ala	Phe	Thr	Leu	Thr
			180					185					190		
Thr	Gly	Leu	Ala	His	Trp	Glu	Val	Leu	Leu	Arg	Ala	Arg	Ala	Ile	Glu
	195						200					205			
Thr	Gln	Cys	Tyr	Val	Val	Ala	Ala	Gln	Thr	Asp	Arg	His	Asn	Glu	
	210					215				220					
Lys	Arg	Thr	Ser	Tyr	Gly	His	Ala	Met	Val	Val	Asp	Pro	Trp	Gly	Leu
225					230				235					240	
Val	Ile	Gly	Gln	Cys	Gln	Glu	Gly	Thr	Gly	Ile	Cys	Tyr	Ala	Glu	Ile
				245				250						255	
Asp	Ile	Pro	Tyr	Met	Glu	Arg	Val	Arg	Arg	Asp	Met	Pro	Val	Trp	Arg
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 <213> S. cerevisiae

<400> 4

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Pro	Lys	Phe	Ile	Arg	Gln	Leu	Gln	Ser	Ser	Ile	Thr	Asp	Leu	Val	Arg
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Asp	Asn	Ser	Arg	Asn	Ile	Asp	Val	Ser	Ile	Gly	Val	His	Leu	Pro	Pro
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Ser	Glu	Gln	Asp	Leu	Leu	Glu	Gly	Asn	Asp	Arg	Val	Arg	Asn	Val	Leu
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Leu	Tyr	Ile	Asp	His	Glu	Gly	Lys	Ile	Leu	Gln	Glu	Tyr	Gln	Lys	Leu
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His	Leu	Phe	Asp	Val	Asp	Val	Pro	Asn	Gly	Pro	Ile	Leu	Lys	Glu	Ser
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Lys	Ser	Val	Gln	Pro	Gly	Lys	Ala	Ile	Pro	Asp	Ile	Ile	Glu	Ser	Pro
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Leu	Gly	Lys	Leu	Gly	Ser	Ala	Ile	Cys	Tyr	Asp	Ile	Arg	Phe	Pro	Glu
				165					170					175	
Phe	Ser	Leu	Lys	Leu	Arg	Ser	Met	Gly	Ala	Glu	Ile	Leu	Cys	Phe	Pro
			180					185					190		
Ser	Ala	Phe	Thr	Ile	Lys	Thr	Gly	Glu	Ala	His	Trp	Glu	Leu	Leu	Gly
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Arg	Ala	Arg	Ala	Val	Asp	Thr	Gln	Cys	Tyr	Val	Leu	Met	Pro	Gly	Gln
	210					215					220				
Val	Gly	Met	His	Asp	Leu	Ser	Asp	Pro	Glu	Trp	Glu	Lys	Gln	Ser	His
225					230					235					240
Met	Ser	Ala	Leu	Glu	Lys	Ser	Ser	Arg	Arg	Glu	Ser	Trp	Gly	His	Ser
				245					250					255	
Met	Val	Ile	Asp	Pro	Trp	Gly	Lys	Ile	Ala	His	Ala	Asp	Pro	Ser	
			260					265				270			
Thr	Val	Gly	Pro	Gln	Leu	Ile	Leu	Ala	Asp	Leu	Asp	Arg	Glu	Leu	Leu
		275					280					285			
Gln	Glu	Ile	Arg	Asn	Lys	Met	Pro	Leu	Trp	Asn	Gln	Arg	Arg	Asp	Asp
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Leu	Phe	His													
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 <213> S. cerevisiae

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 Ala Thr Phe Ile Glu Arg Ala Met Lys Glu Gln Pro Asp Thr Lys Leu  
 35 40 45  
 Val Val Leu Pro Glu Cys Phe Asn Ser Pro Tyr Ser Thr Asp Gln Phe  
 50 55 60  
 Arg Lys Tyr Ser Glu Val Ile Asn Pro Lys Glu Pro Ser Thr Ser Val

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	Gly	Thr	Ile	Pro	Glu	Leu	Asp	Pro	Lys	Thr	Asp	Lys	Ile	Tyr	Asn	Thr	
			100						105					110			
	Ser	Ile	Ile	Phe	Asn	Glu	Asp	Gly	Lys	Leu	Ile	Asp	Lys	His	Arg	Lys	
			115					120					125				
	Val	His	Leu	Phe	Asp	Val	Asp	Ile	Pro	Asn	Gly	Ile	Ser	Phe	His	Glu	
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	Ser	Glu	Thr	Leu	Ser	Pro	Gly	Glu	Lys	Ser	Thr	Thr	Ile	Asp	Thr	Lys	
	145					150					155				160		
	Tyr	Gly	Lys	Phe	Gly	Val	Gly	Ile	Cys	Tyr	Asp	Met	Arg	Phe	Pro	Glu	
				165						170					175		
	Leu	Ala	Met	Leu	Ser	Ala	Arg	Lys	Gly	Ala	Phe	Ala	Met	Ile	Tyr	Pro	
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		195						200					205				
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	210						215					220					
	Ala	Arg	Asn	Leu	Gln	Ser	Ser	Tyr	His	Ala	Tyr	Gly	His	Ser	Ile	Val	
	225					230					235				240		
	Val	Asp	Pro	Arg	Gly	Lys	Ile	Val	Ala	Glu	Ala	Gly	Glu	Gly	Glu	Glu	
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	Ile	Ile	Tyr	Ala	Glu	Leu	Asp	Pro	Glu	Val	Ile	Glu	Ser	Phe	Arg	Gln	
				260					265					270			
	Ala	Val	Pro	Leu	Thr	Lys	Gln	Arg	Arg	Phe	Asp	Val	Tyr	Ser	Asp	Val	
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 <212> PRT  
 <213> S. pombe

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			20						25					30		
	Gly	Ala	Lys	Cys	Ile	Phe	Phe	Pro	Glu	Ala	Ser	Asp	Phe	Ile	Ala	His
			35					40					45			
	Asn	Ser	Asp	Glu	Ala	Ile	Glu	Leu	Thr	Asn	His	Pro	Asp	Cys	Ser	Lys
		50					55					60				
	Phe	Ile	Arg	Asp	Val	Arg	Glu	Ser	Ala	Thr	Lys	His	Ser	Ile	Phe	Val
	65					70					75				80	
	Asn	Ile	Cys	Val	His	Glu	Pro	Ser	Lys	Val	Lys	Asn	Lys	Leu	Leu	Asn
				85						90				95		
	Ser	Ser	Leu	Phe	Ile	Glu	Pro	Leu	His	Gly	Glu	Ile	Ile	Ser	Arg	Tyr
			100						105					110		
	Ser	Lys	Ala	His	Leu	Phe	Asp	Val	Glu	Ile	Lys	Asn	Gly	Pro	Thr	Leu
			115					120					125			
	Lys	Glu	Ser	Asn	Thr	Thr	Leu	Arg	Gly	Glu	Ala	Ile	Leu	Pro	Pro	Cys
		130					135						140			

Lys	Thr	Pro	Leu	Gly	Lys	Val	Gly	Ser	Ala	Ile	Cys	Phe	Asp	Ile	Arg
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Phe	Pro	Glu	Gln	Ala	Ile	Lys	Leu	Arg	Asn	Met	Gly	Ala	His	Ile	Ile
				165					170					175	
Thr	Tyr	Pro	Ser	Ala	Phe	Thr	Glu	Lys	Thr	Gly	Ala	Ala	His	Trp	Glu
			180					185					190		
Val	Leu	Leu	Arg	Ala	Arg	Ala	Leu	Asp	Ser	Gln	Cys	Tyr	Val	Ile	Ala
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Ser	Met	Ile	Val	Asp	Pro	Trp	Gly	Thr	Val	Ile	Ala	Gln	Tyr	Ser	Asp
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Ile	Ser	Ser	Pro	Asn	Gly	Leu	Ile	Phe	Ala	Asp	Leu	Asp	Leu	Asn	Leu
				245					250					255	
Val	Asp	His	Val	Arg	Thr	Tyr	Ile	Pro	Leu	Leu	Arg	Arg	Asn	Asp	Leu
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Tyr	Pro	Thr	Ile												
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 <213> S. pombe

<400> 7

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Ala	Ser	Ser	Leu	Val	Pro	Lys	Asp	Phe	Arg	Ala	Phe	Arg	Ile	Gly	Leu
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Val	Gln	Leu	Ala	Asn	Thr	Lys	Asp	Lys	Ser	Glu	Asn	Leu	Gln	Leu	Ala
	50					55					60				
Arg	Leu	Lys	Val	Leu	Glu	Ala	Ala	Lys	Asn	Gly	Ser	Asn	Val	Ile	Val
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Leu	Pro	Glu	Ile	Phe	Asn	Ser	Pro	Tyr	Gly	Thr	Gly	Tyr	Phe	Asn	Gln
				85					90					95	
Tyr	Ala	Glu	Pro	Ile	Glu	Glu	Ser	Ser	Pro	Ser	Tyr	Gln	Ala	Leu	Ser
			100					105					110		
Ser	Met	Ala	Lys	Asp	Thr	Lys	Thr	Tyr	Leu	Phe	Gly	Gly	Ser	Ile	Pro
		115						120				125			
Glu	Arg	Lys	Asp	Gly	Lys	Leu	Tyr	Asn	Thr	Ala	Met	Val	Phe	Asp	Pro
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Ser	Gly	Lys	Leu	Ile	Ala	Val	His	Arg	Lys	Ile	His	Leu	Phe	Asp	Ile
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Asp	Ile	Pro	Gly	Gly	Val	Ser	Phe	Arg	Glu	Ser	Asp	Ser	Leu	Ser	Pro
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Gly	Asp	Ala	Met	Thr	Met	Val	Asp	Thr	Glu	Tyr	Gly	Lys	Phe	Gly	Leu
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Thr	Gly	Pro	Leu	His	Trp	Glu	Leu	Leu	Ala	Arg	Ala	Arg	Ala	Val	Asp

225	230	235	240
Asn Glu Met Phe Val	Ala Cys Cys Ala	Pro Ala Arg Asp Met	Asn Ala
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Asp Tyr His Ser Trp	Gly His Ser Thr	Val Val Asp Pro	Phe Gly Lys
	260	265	270
Val Ile Ala Thr Thr	Asp Glu Lys Pro	Ser Ile Val Tyr	Ala Asp Ile
	275	280	285
Asp Pro Ser Val Met	Ser Thr Ala Arg	Asn Ser Val Pro	Ile Tyr Thr
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Glu Glu			320

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 <213> Homo sapien

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- 8 -



Asn	Gly	Val	Ala	Pro	Ser	Thr	Thr	Val	Arg	Val	Thr	Ile	Val	Gln	Ser
		20						25					30		
Ser	Thr	Val	Tyr	Asn	Asp	Thr	Pro	Ala	Thr	Ile	Asp	Lys	Ala	Glu	Lys
		35					40					45			
Tyr	Ile	Val	Glu	Ala	Ala	Ser	Lys	Gly	Ala	Glu	Leu	Val	Leu	Phe	Pro
		50				55					60				
Glu	Gly	Phe	Ile	Gly	Gly	Tyr	Pro	Arg	Gly	Phe	Arg	Phe	Gly	Leu	Ala
65					70					75					80
Val	Gly	Val	His	Asn	Glu	Glu	Gly	Arg	Asp	Glu	Phe	Arg	Lys	Tyr	His
			85						90					95	
Ala	Ser	Ala	Ile	His	Val	Pro	Gly	Pro	Glu	Val	Ala	Arg	Leu	Ala	Asp
			100					105					110		
Val	Ala	Arg	Lys	Asn	His	Val	Tyr	Leu	Val	Met	Gly	Ala	Ile	Glu	Lys
		115					120					125			
Glu	Gly	Tyr	Thr	Leu	Tyr	Cys	Thr	Val	Leu	Phe	Phe	Ser	Pro	Gln	Gly
		130				135						140			
Gln	Phe	Leu	Gly	Lys	His	Arg	Lys	Leu	Met	Pro	Thr	Ser	Leu	Glu	Arg
145					150					155					160
Cys	Ile	Trp	Gly	Gln	Gly	Asp	Gly	Ser	Thr	Ile	Pro	Val	Tyr	Asp	Thr
				165					170					175	
Pro	Ile	Gly	Lys	Leu	Gly	Ala	Ala	Ile	Cys	Trp	Glu	Asn	Arg	Met	Pro
			180					185					190		
Leu	Tyr	Arg	Thr	Ala	Leu	Tyr	Ala	Lys	Gly	Ile	Glu	Leu	Tyr	Cys	Ala
		195					200					205			
Pro	Thr	Ala	Asp	Gly	Ser	Lys	Glu	Trp	Gln	Ser	Ser	Met	Leu	His	Ile
		210				215					220				
Ala	Ile	Glu	Gly	Gly	Cys	Phe	Val	Leu	Ser	Ala	Cys	Gln	Phe	Cys	Gln
225					230					235					240
Arg	Lys	His	Phe	Pro	Asp	His	Pro	Asp	Tyr	Leu	Phe	Thr	Asp	Trp	Tyr
				245					250					255	
Asp	Asp	Lys	Glu	His	Asp	Ser	Ile	Val	Ser	Gln	Gly	Gly	Ser	Val	Ile
			260					265					270		
Ile	Ser	Pro	Leu	Gly	Gln	Val	Leu	Ala	Gly	Pro	Asn	Phe	Glu	Ser	Glu
		275					280					285			
Gly	Leu	Val	Thr	Ala	Asp	Ile	Asp	Leu	Gly	Asp	Ile	Ala	Arg	Ala	Lys
		290				295					300				
Leu	Tyr	Phe	Asp	Ser	Val	Gly	His	Tyr	Ser	Arg	Pro	Asp	Val	Leu	His
305					310					315					320
Leu	Thr	Val	Asn	Glu	His	Pro	Arg	Lys	Ser	Val	Thr	Phe	Val	Thr	Lys
				325					330					335	
Val	Glu	Lys	Ala	Glu	Asp	Asp	Ser	Asn	Lys						
			340					345							